REMARKS

Claims 3, 9, 10 and 13-16 have been rejected under 35 USC §112, ¶2. These claims are amended above in response to this rejection.

Claims 1-5 and 7-16 are rejected under 35 USC §103(a) as unpatentable over Dieing et al. (EP 893117) in combination with either Matsumoto et al. (US 5,603,926) or Tanner et al. (US 5,827,508). Alternatively, the claims are rejected under this section as obvious over Matsumoto or Tanner, either in view of Dieing. Applicants respectfully traverse these rejections.

The presently claimed invention recites cosmetic preparations containing specific polymers combined with inorganic UV filters and use of these preparations in protecting human skin and hair from solar rays. The cited references, taken together, do not suggest the desireability of the claimed combination and use.

The presently claimed copolymers are species of the copolymers disclosed in Dieing. That reference states that the generic copolymers, "when added to shampoos, show excellent conditioning properties without a build-up effect," and that "the hair showed very good foaming properties and a decrease in wet combing force ... compared to a control shampoo" (abstract).

No indication is given that the copolymers would be suitable for use as sunscreen preparations, and certainly there is no indication that the particular species selected would *enhance* the UV protective effects of inorganic UV filters. Introducing UV filters into cosmetic preparations might be understood generally in the art, and yet no particular motivation to introduce such into preparations comprising these particular

copolymers is apparent. Additionally, shampoos and conditioners are produced to be transiently applied to hair for cleaning purposes, and one of skill in the art would not view inclusion of UV filters to be economically beneficial, especially where the residue from these copolymers is shown to be lessened.

The examiner cites Matsumoto as teaching "hair cosmetic compositions comprising cationic polymers in combination with zinc oxide treated with silicone and titanium oxide treated with silicone" (office action, p.4). However, Matsumoto teaches cationic polymers prepared by polymerization of an acrylic and/or methacrylic monomer having an amino group (e.g., N,N-dimethylaminoethyl methacrylate), a vinyl monomer (e.g., N-vinylpyrrolidone), a monomer having an acryloyl group and/or a monomer having a methacryloyl group ((meth)acryloyl acrylate) and a crosslinkable vinyl monomer (tripropylene glycol diacrylate) (col.3:8-57; preparative example 3), and neither teaches nor suggests using the presently claimed copolymers in the particular cosmetic applications described therein.

Tanner teaches that dibenzoylmethane sunscreen agents can be photostabilized by incorporating physical sunblocks, i.e., inorganic compounds such as zinc oxide (col.2:7-9). These are said to be difficult, generally, for this purpose, in large part due to their reactivity with other compounds (col.2:14-17), and Tanner teaches that the zinc oxide must be surface-treated to make it less reactive with the dibenzoylmethane and other sunscreen compounds (col.2:20-27). Given this disclosure, applicants submit that one of skill in the art would not choose to combine an inorganic UV filter with the copolymers of the present invention, whether or not the inorganic UV filter was surface-

treated. As photostability of the presently claimed copolymers is not at issue, and as even surface-treated zinc oxide is said to be reactive with such copolymers, applicants submit that the Tanner reference teaches *away* from the combination suggested by the examiner.

According to the above discussion, neither Matsumoto nor Tanner gives suggestion or motivation to introduce an inorganic UV filter into a copolymer composition as disclosed in Dieing. Matsumoto gives no indication that the particular species of Dieing copolymer recited in the present claims is of any relative importance in a cosmetic preparation, and gives no indication as to why the inorganic oxides were included in the single example. Tanner teaches away from using inorganic UV filters with the copolymer of the presently claimed invention. Applicants submit that no *prima facie* case of obviousness has been established, and that the presently claimed invention is not obvious over Dieing, Matsumoto and Tanner, in any combination.

Further, applicants respectfully assert that the presently claimed invention gives unexpectedly beneficial results that could not be foreseen by any combination of the cited references. The polymers of the present invention impart a considerable improvement in skin compatibility to cosmetic and dermatological preparations through moisturizing and conditioning of the skin. The polymers also stabilize the preparations, and in particular, emulsions comprising the inorganic UV filters (see specification example 2 and comparative example 2). Finally, the mixtures according to the present claims attain relatively high sun protection factors using only the inorganic UV filter to impart this protection. The polymer of the present invention increased the sun

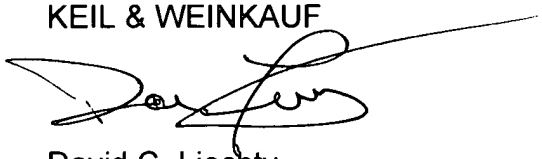
protection factor of compositions having equivalent amounts of an inorganic UV filter by at least 1.1 to 3.0, compared with compositions without this polymer (see specification example 1 and comparative example 1).

The good UVA protection attained by Tanner results from the combination of two UV filters, zinc oxide and dibenzoylmethane, to which a polymer such as that of the present invention could be added. Neither Tanner nor Matsumoto suggests that the present polymers could give the observed synergistic effect when combined with inorganic UV filters. Accordingly, applicants respectfully assert that the present invention is not obvious over Dieing in view of either Matsumoto or Tanner, nor is it obvious over either Matsumoto or Tanner, either in view of Dieing. The rejection of claims 1-5 and 7-16 under 35 USC §103(a) is, therefore, requested to be withdrawn.

In view of the foregoing amendments and remarks, applicants consider that the rejections of record have been obviated and respectfully solicit passage of the application to issue.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,
KEIL & WEINKAUF



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VERSION WITH MARKINGS TO SHOW CHANGES MADE IN THE CLAIMS

Please amend claims 3, 9, 13 and 14 to read as follows:

3. (twice amended) A mixture as claimed in claim 1, wherein the monomer (e) is used [is] in a weight amount of from 0.01 to 10% [by weight of at least one monomer having at least two ethylenically unsaturated nonconjugated double bonds which acts as crosslinker].

9. (amended) A mixture as claimed in claim 1 [8], comprising, as inorganic UV filter B), at least one hydrophobicized metal oxide chosen from the group consisting of titanium dioxide and zinc oxide.

13. (three times amended) A process for the preparation of cosmetic and dermatological preparations wherein a mixture is prepared as defined [as] in claim 1 [is prepared], and then optionally mixed with other compounds [and applied to the human skin or the human hair].

14. (three times amended) The process as claimed in claim 13 for producing cosmetic and dermatological preparations for protecting the human skin or human hair against solar rays, wherein the mixture is prepared, and then [optionally] mixed with compounds which absorb in the UV region and which are known per se for cosmetic and pharmaceutical preparations[, and is then applied to the human skin or human hair].

16. (amended) A mixture comprising

A) at least one copolymer obtained by

(i) free-radically initiated solution polymerization of a monomer mixture of

(a) 10 to 70% by weight of 3-methyl-1-vinylimidazolium methosulfate,

(b) 20 to 89.95% by weight of N-vinylpyrrolidone,

(c) 0.05 to 5% by weight of N,N'-divinylethylenurea

[(ii) subsequent partial or complete quaternization or protonation of the polymer where the monomer (a) is not quaternized or only partially quaternized]

and

B) 30 to 90% by weight, based on the solids content of the mixture, of at least one hydrophobicized metal oxide chosen from the group consisting of titanium dioxide and zinc oxide.

Please enter the following claim 17.

17.(newly added) A process for protecting the human skin or human hair against solar rays, wherein an effective amount of a cosmetic or dermatological preparation as claimed in claim 13 is applied to the human skin or human hair.